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Integrating teaching into the busy resident schedule: A learner-centered approach to raise efficiency (L-CARE) in clinical teaching

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Abstract

Background: Clinical teachers are sometimes challenged by residents who seem too busy to concentrate on their learning. In such situations, teachers must be aware to diagnose underlying problems in learners and to effectively help them maximize learning while minimizing time and energy requirements.

Objective: To develop a learner-centered model to improve efficiency of clinical teaching.

Methods: We reviewed the literature on educational diagnosis, self-directed learning, and effective/efficient teaching to put together a new model.

Results: The Learner-Centered Approach to Raise Efficiency (L-CARE) in Clinical Teaching is inspired from the well-known patient-centered clinical method. Using the L-CARE in clinical teaching involves: (1) addressing the learners' *feelings* regarding their environment as well as patient care and study issues, which provides a good learning climate facilitating educational diagnosis and management of issues that could impair learning; (2) establishing a learning contract (*expectations*); (3) sharing resources and strategies (*ideas*) that should be effective without wasting time or energy; (4) self-assessment and constructive feedback (*impact*). These steps are grounded in self-directed learning theory to improve motivation and ensure that learners concentrate on their own needs to promote learning efficiency.

Conclusion: The L-CARE model integrates educational diagnosis principles, self-directed learning theory, and efficient teaching strategies to improve efficiency of clinical teaching.

Introduction

Ambulatory care teaching is often perceived by community physicians as demanding due to competing demands in a busy community office. Teachers in an academic setting have protected time dedicated to teaching, during which they do not also have to provide direct patient care. One might think that time constraints vanish in this setting. However, even with protected time, the additional challenges to teaching also exist in this environment, as residents are challenged by time management of patient care, study, and personal issues, making them perhaps less receptive to teaching. Efficiency of teaching is the key to help residents learn the best they can despite their busy schedule.

Efficient teaching – which can be defined as high-quality (effective) teaching without wasted energy or effort – is very important for residents and medical students, who want to maximize learning while minimizing time and energy requirements. We propose that using a learner-centered approach inspired from the patient-centered clinical method (Stewart et al. 1995) allows both teacher and learner to find a common ground for teaching and supervision.

Practice points

- Learners who do not seem to have time for learning are challenging for teachers, who should consider the trainee's personal and professional context for an appropriate educational diagnosis.
- Efficient teaching is possible when offering effective (high-quality) and learner-centered teaching while avoiding "overteaching".
- The L-CARE in Clinical Teaching model integrates educational diagnosis principles, self-directed learning theory, and efficient teaching strategies to help maximize learning while minimizing time and energy requirements.

The patient-centered clinical method was first described by Stewart et al. in 1995. In this approach, "(...) *the hierarchical notion of the professional being in charge and the patient being passive does not hold. To be patient-centered, the practitioner must be able to (...) share the power in the relationship, and this means renouncing control which traditionally has been in the hands of the professional*"

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(Stewart et al. 1995). In medical education, an approach known as the self-directed learning theory also promotes sharing: the responsibility of learning is not only on the teacher, but also on the learner (Kaufman 2003).

The patient-centered clinical method also involves exploring the dimensions of illness (feelings, ideas, impact on function, and expectations) (Stewart et al. 1995). Applying this approach in medical education therefore invites the teacher to consider similar dimensions. This approach promotes a good learning climate to facilitate awareness of educational diagnosis and management of issues that could impair learning. The purpose of this article is to integrate educational diagnosis principles, self-directed learning theory, and principles of efficient teaching in a new Learner-Centered Approach to Raise Efficiency (L-CARE) in clinical teaching.

Literature basis for the model

Educational diagnosis

During residency training, learners work to increase their *knowledge*, perfect their *skills*, and are encouraged to adopt *attitudes* reflecting the values of the profession. An important role of teachers is to assess the learners' progression in these three domains. Medical students or residents who are not progressing appropriately come to the attention of faculty for different reasons. One example is working with learners who do not seem to be receptive to teaching. This situation challenges teachers, and often flags a learner in difficulty. "Diagnosing" the source of the problem is an important part of developing the right solution.

The first comprehensive approach to working with residents in difficulty was published by Steinert and Levitt in 1993 (Steinert & Levitt 1993), and is still currently used (Steinert 2008). They describe a 3-step algorithm:

(1) Suspecting a problem, which might be at different levels (*learner*, *teacher*, *system/environment*) that may overlap. If a learner is diagnosed with a difficulty, teachers need to define the problem as one of *knowledge*, *attitude*, or *skills* (overlap between these areas can occur), assess the contributing factors (teacher or system problems) and potential impact of the problem.
(2) Confirming initial suspicions by talking about their observed perception of the problem, strengths, and weaknesses to the resident, and inquiring appropriately about relevant personal issues while remaining objective in areas of concern and avoiding being judgmental. Perceptions of colleague teachers, mentors, and program directors should also be sought (a process also known as multisource assessment or 360-degree evaluation).
(3) Designing an intervention, where the teacher and resident should prioritize problems along with defining intervention and evaluation strategies together.

More recently, the *Multiaxial framework for pedagogical diagnosis and intervention planning in supervision* was developed by a team of family physicians from Laval

University, Quebec City. In this 6-axes framework, the data gathering phase relates the learners' clinical behavior (Axis 1) and attitudes (Axis 2) with their environment (personal and professional) (Axis 3) to promote examination of different aspects of the problem, leading to a comprehensive diagnosis (Axis 4) of the resident's difficulties. After diagnosing the environmental and/or attitudinal problem and evaluating its prognosis (Axis 5), the teacher discusses with the learner to jointly come up with an educational intervention plan (Axis 6) to address the difficulties (Boutin et al. 2007).

Both models highlight the importance of inquiring appropriately about the resident's personal issues when working with a learner in difficulty. Therefore, the teacher must ask the learner what might explain lack of time for learning activities. Issues in the learner's environment are summarized under the *Environment* section in Table 1.

On the professional level, evaluating the learner's knowledge and skills at the different stages of medical training is not simple. Some models (RIME model (Pangaro 1999) and Bordage's model (Bordage 1994; University of British Columbia Department of Family Practice 2008) have been proposed to facilitate assessment and feedback. Attitude problems are often more difficult to deal with. Learners presenting with attitudinal concerns are often not aware of it (Kruger & Dunning 1999) and can monopolize a great deal of a teacher's time.

Two common attitudinal problems that can explain reluctance to participate in teaching activities are professionalism issues and lack of motivation. Unprofessional behavior can occur in or outside the learning environment. Designated faculty should be able and allowed to impose sanctions when students demonstrate such behaviors (Bonke 2006). Lack of motivation is often less obvious but is also harmful for the teaching encounter, as teachers will usually feel they will or do more than the student, which results in much frustration for teachers. Both intrinsic and extrinsic motivations (Race 2002) occur in medical education, where some situations require a controlling environment (such as studying for certification exams or to find out the answer to a preceptor's question) whereas other circumstances allow the learner to follow an autonomous motivation (for instance, willingly gaining knowledge of a specific clinical condition encountered, or studying for one's own future practice instead of for the exams). This autonomous type of motivation was shown to be associated with better quality of learning (Sobral 2004).

Strategies that might be used by teachers to identify problems and improve learners' knowledge, skills, and attitudes are presented under the *Study* and *Patient care* sections in Table 1.

Self-directed learning theory

An effective teacher will activate learners by stimulating their motivation while adopting an appropriate teaching style (Reilly 2007) specific to the learner's needs. The *Self-directed learning theory* provides the basics for this approach.

Knowles is known to be the father of andragogy – "the art and science of helping adults learn" – on which self-directed learning theory is based. He defined self-directed learning as

| Table 1. Educational diagnosis and management of challenging learners.			
Educational diagnosis and management of challenging learners			
Learner			
Environment (1)	*Study* (3)		*Patient care* (2)
Diagnosis	*Diagnosis*	Attitudes	*Diagnosis*
Personal	Decreased motivation		Professionalism issues (lack of respect for
Health-related issues	*Management*		patients, falsification of documents,
Familial	Be aware of learning context, clarify		substance abuse, breach of
Conjugal problems, demanding	goals, create teachable moments		confidentiality, etc.)
family life	(Wagner & Ash 1998), create the need to		*Management*
Social	know (Rubenstein & Talbot 2003), use		Discuss with learner; sanctions depending
Eventful social schedule, multiple	tools such as Five clinical teaching		on severity
extra-medical engagements	microskills (Neher et al. 1992) and		
Management	SNAPPS (Wolpaw et al. 2003), discuss		
Learners with major and/or persis-	professional orientation (Boulé et al.		
tent problems should be referred to	1995)		
their program directors	*Diagnosis*	Skills	*Diagnosis*
	Lack of time management, organizational,		Lack of clinical/procedural/communication/
	and search strategy skills; low level of		time management skills
	self-direction		*Management*
	Management		Provide support and encourage learning;
	Provide support and encourage learning		use Bordage*) and RIME** as a feedback
			tool
	Diagnosis	Knowledge	*Diagnosis*
	Lack of knowledge of available resources		Lack of fundamental or clinical knowledge
	Management		*Management*
	Provide support and encourage learning,		Provide support and encourage learning
	match trainee's learning styles (Mohanna		
	et al. 2004)		

*Bordage suggested a model to stage the learners' knowledge and clinical reasoning skills through the curriculum: at early stages of training, learners have a legitimately reduced knowledge (stage I) and subsequently some show varying degrees of dispersed knowledge (stage II – poorly organized and superficial knowledge). Later in training, they ideally achieve an elaborated knowledge (stage III) where an encyclopedic grasp of detail supports clinical management. By the end of residency or more commonly after several years in practice, the learner should have reached the level of compiled knowledge (stage IV) implying expert rapid pattern recognition and more efficient practice. (Batty 2006; University of British Columbia Department of Family Practice 2008).
**The RIME model illustrates progression of the learner from being reporter, interpreter, manager, and educator (Pangaro 1999).

a process "*in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes*" (Knowles 1975). Two major characteristics of this method are the *learner's responsibility* towards his/her own learning (Kaufman 2003) and the role of the *educator as a facilitator* rather than a content expert (Cuffarella 1993). Self-direction is essential to efficient learning. However, it is not inborn: the principles of self-directed learning are not familiar to all residents, as they have mostly experienced pedagogic principles in their previous education (Rubenstein & Talbot 2003). It is therefore important to guide learners in the process of becoming a self-directed adult learner, as illustrated in Figure 1. Using a self-directed learning approach in clinical teaching increases learners' motivation and therefore promotes efficiency (Mann 1999).

Efficient teaching strategies

Efficiency can be defined as "*the ability to do something well or achieve a desired result without wasted energy or effort*" (Encarta® World English Dictionary [North American Edition] 2007). The current literature on efficiency in teaching (Garg et al. 1991; Bowling 1993; Kearl & Mainous 1993; Ferenchick 1997; Ricer et al. 1997; Regan-Smith et al. 2002; Dobbie et al.
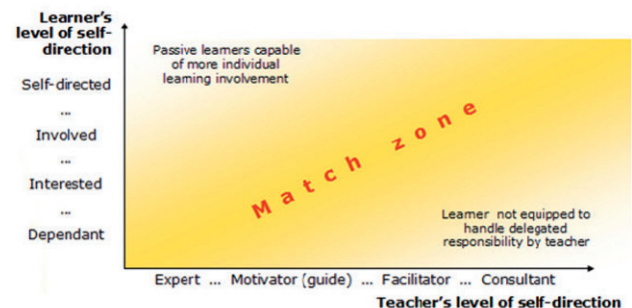
Figure 1. Grow's stages of self-directed learning.
Notes: The teacher's role is to guide learners through the improvement of their self-direction skills, learned through different stages: at first, the learner is dependent, then becomes interested, involved and finally self-directed. Teachers should take care to matching their teaching style to the learners' stage of self-directedness, and progressively decrease their responsibility towards learning (move from being expert to motivator, facilitator and ultimately consultant). Illustrative diagram inspired from Grow (Grow 1991).

2005) is mostly related to income, productivity, and advice for minimizing added tasks for office-based preceptors. However, some of the strategies discussed in these articles help support our understanding of efficient teaching, which is *high-quality (effective) teaching and learning without wasted energy or*

Table 2. Efficient teaching strategies.

Efficient clinical teaching strategies (4)

Be effective	Do not overteach
Develop qualities of effective teachers: Attitudes – Enthusiasm (Irby et al.1991) – Modeling professional characteristics (Irby et al. 1991) Skills – Good interpersonal skills (Kilminster et al. 2007) – Clinical competence (Irby et al. 1991;Kilminster et al. 2007) Knowledge (Irby et al.1991)	Skills – Organization and clarity (Irby et al.1991) – Good teaching (Kilminster et al. 2007) & group instructional skills (Irby et al.1991) – Clinical supervision skills (Irby et al.1991; Kilminster et al. 2007)
Assessment of environment/patient care and study (feelings) – Diagnose the learner's situation – Foster autonomy (Kilminster et al. 2007)	– Motivate the learner (Kilminster et al. 2007)
Establish learning needs (expectations) – Structure supervision (regular timetabled meetings, early determination of learning objectives and supervision meetings content) (Kilminster et al. 2007) – Agree on daily goals (Dobbie et al. 2005)	– Ensure goals are achievable for the available time
Identify resources and strategies (ideas) – Adjust teaching style to the trainee's learning style and level of self-directed learning readiness (Mohanna et al. 2004) – Limit the number of patients the student sees (Dobbie et al. 2005) – Encourage ''just in time'' learning (Dobbie et al. 2005) – Choose among a variety of subjects for supervision (clinical management, teaching, research, administration, pastoral care, interpersonal skills, personal development, reflection) (Kilminster et al. 2007) – Manage time (Kilminster et al. 2007)	– Focus on one theme for the supervision half-day (problem-oriented learning) (Heidenreich et al. 2000) – Limit presentation time by using the *Five clinical teaching microskills* (Neher et al. 1992) or the pattern recognition technique (Heidenreich et al. 2000) – Limit teaching points by choosing one or two key concepts per teaching interaction (Heidenreich et al. 2000) – Link learning to caring: teaching should be directly relevant to the learner's patient problem (Reilly 2007)– capture the teachable moment when it occurs – Use learning pearls as a teaching tool (Crow, Jr 2004)
Promote self-assessment and provide feedback (impact) – Provide constructive feedback (Kilminster et al. 2007), debrief and plan for the next session (Dobbie et al. 2005)	– Focus on issues that can be remedied

effort. Efficient clinical teaching strategies promoting effectiveness and avoidance of overteaching are summarized in Table 2. These methods all promote focusing on specific learning points and emphasize key concepts such as a take-home message. They respect andragogy by avoiding teacher-

centered education, as they integrate the demands of everyday life, are problem-centered and use internal drivers instead of external (teacher) ones, which are more motivating.

Learner-centered approach to raise efficiency in clinical teaching

Educational diagnosis strategies, *self-directed learning theory*, and *efficient teaching strategies* previously described can now be put together in a new model for efficient teaching (Figure 2). As mentioned earlier, this model is intended to promote efficiency for the learner rather than teachers' productivity – which has already been discussed in other articles (Garg et al. 1991; Bowling 1993; Kearl & Mainous 1993; Ferenchick 1997; Ricer et al. 1997; Regan-Smith et al. 2002; Dobbie et al. 2005).

Structure

The L-CARE in clinical teaching model illustrates the encounter of a learner and teacher in their personal and professional context, when they both have personal, familial and social *environment* (1) needs and concerns. Above and beyond, the professional environment is largely devoted to *patient care* (2) and *study time* (3) (or continuing professional development/ faculty development and administrative duties). *Teaching* (4) has to find its place in a busy clinical environment, where there are multiple competing demands for both learner and teacher.

In this model, the learner is illustrated with the left circle and the teacher is represented on the right. The concentric shapes represent the required attitudes, skills, and knowledge for both members. For the clinical trainee, patient care involves professionalism (attitude), clinical, procedural, communication, and time management skills as well as fundamental and clinical knowledge. Study time requires good motivation (attitude), time management, and learning strategies (organizational, search strategy, and self-directed learning skills) to help gaining knowledge. When facing a challenging learner, teachers can analyze these three areas to facilitate the educational diagnosis process. As described in Table 2, effective teachers are enthusiastic and involved in role modeling (attitude), will show great organization skills, good teaching, instructional, clinical supervision, and interpersonal skills, and are clinically competent (skills). They are also clinically knowledgeable (Irby et al. 1991; Kilminster et al. 2007).

The learner and teacher circles overlap to create the teaching environment. The central cycle illustrates the learner-centered approach in self-directed learning, in which teachers should be attentive to four dimensions of learning: feelings (regarding their personal, familial, and social *environment* as well as *patient care* and *study* issues), expectations (establishing a learning contract), ideas (learning resources and strategies), and evaluation of the impact of a learning situation on the trainee.

In our model, the principles of self-directed learning theory have been rearranged in three steps and associated with dimensions of the learner-centered approach. The first step of the L-CARE in clinical teaching addresses the learners' feelings regarding their *environment* as well as *patient care* and *study*
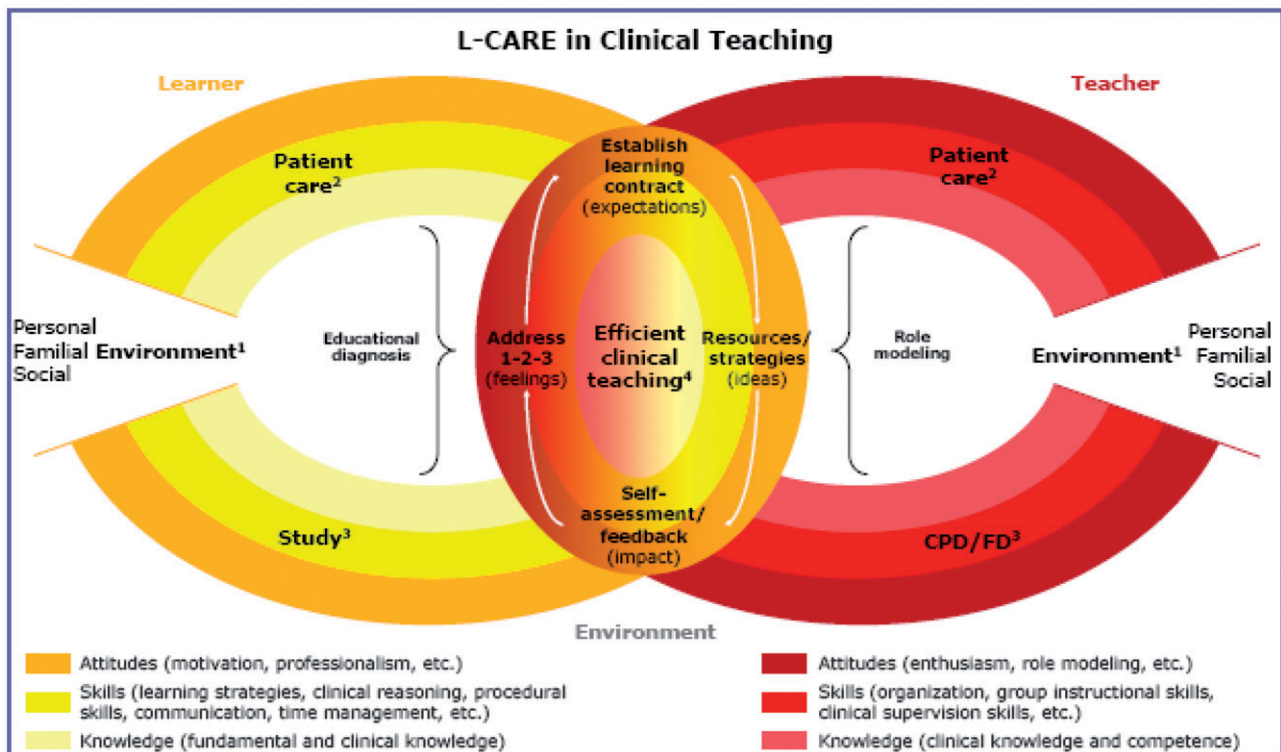
Figure 2. Learner-Centered Approach to Raise Efficiency (L-CARE) in Clinical Teaching.
The L-CARE in clinical teaching model illustrates the encounter of a learner and teacher in their personal and professional context, when they both have personal, familial and social *environment* (1) needs and concerns. Above and beyond, the professional environment is largely devoted to *patient care* (2) and *study time* (3) (or continuing professional development/faculty development and administrative duties). *Teaching* (4) has to find its place in this mutually dense schedule. In this model, the learner is illustrated with the left circle and the teacher is represented on the right. The concentric shapes represent the required attitudes, skills and knowledge for both members. The learner and teacher circles are overlapped to create the teaching environment. The central cycle illustrates the learner-centered approach in self-directed learning. CPD/FD: continuing professional development/faculty development.

issues. This provides a good learning climate facilitating educational diagnosis and management of environmental, professional or academic issues that could impair teaching and learning. Secondly, L-CARE invites the learner and teacher to mutually establish a learning contract, stating the learning needs and objectives (expectations). Teaching then involves sharing resources and strategies (ideas) that should be effective without wasting time or energy, ensuring efficient teaching to facilitate achievement of learning goals. Finally self-assessment and constructive feedback complete the self-directed learning process. These steps are grounded in the self-directed learning theory to improve motivation and ensure that learners concentrate on their own needs to promote learning efficiency.

Learner-centered efficient teaching

This section will now integrate efficient teaching strategies listed in Table 2 with the educational diagnosis and self-directed learning concepts to exemplify the L-CARE model.

Good interpersonal skills will assist the teacher in asking about personal/familial/social *environment* (1) issues, as well as providing or suggesting support, counseling, and planning interventions with the learner when required.

Patient care (2) is a reliable training opportunity for the learner if the preceptor is careful about providing a balanced workload. Teachers are able to demonstrate their *clinical competence* and act as role models. *Teaching skills* such as giving direction, being available and having knowledge of teaching resources plus certification requirements (Kilminster et al. 2007), will also help learners organize their *study* (3). During supervision, it is crucial to assess the learner: *diagnosing* knowledge gaps, difficulty with certain skills, and attitude problems (related with patient care or study) are essential not only to make sure the trainee provides safe and appropriate patient care, but also to help focus teaching on identified areas of need to help in patient care and self-directed study.

Even the best of teachers may tend to provide lengthy supervision sessions (by personal interest or comprehensiveness ambition) which may be very interesting, but not matched with the trainee's *learning style* or *level of self-directed learning readiness*, or merely not time-effective for both learners and teachers. As reported earlier, efficient teaching strategies maximize effective teaching and minimize time and energy requirements. Some *helpful supervisory behaviors* such as *problem-orientated teaching*, *limiting presentation time*, and summarizing teaching points help to avoid

overteaching. Integrating brief "*pearls*" into teaching sessions also allows efficient teaching dialogues in concert with providing learners with key clinical information. These strategies from Table 2 can be used as tools that will improve efficiency of teaching. This is expected to improve the trainees' receptiveness to teaching as well, since more efficient teaching will better suit their busy schedule of patient care, study and personal issues (4).

The L-CARE model will help teachers achieve efficiency by making them more aware of personal and professional issues that can affect teaching and learning, and by suggesting helpful clinical teaching strategies that enhance efficiency.

Conclusion

In summary, efficient supervision can be defined as high-quality (effective) teaching and learning without wasted energy or effort. Using a learner-centered approach creates a good learning climate with the learner to allow educational diagnosis and management of personal and professional issues that could impair learning and supervision. By identifying the learning issues together that need to be addressed, one can work on removing the barriers that are preventing learning, and improve efficiency of teaching. The self-directed learning theory improves motivation and ensures the learners concentrate on their own needs, which is essential for efficiency. By using tools that focus teaching, efficient supervision is promoted. Educational diagnosis principles, self-directed learning theory and efficient teaching strategies are now integrated in the *L-CARE in Clinical Teaching* model. This will help teachers to better understand how to help learners integrate learning into their busy schedule, and for both learners and teachers to become more efficient in their learning environment.

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